

ABSTRACT OF THE DISCLOSURE

An optical wireless transceiver for communicating broadband signals through free space includes an input, a regenerator, a splitter and a plurality of lasers in transmitter modules. A very fast (low f-number) optical receiver module includes a reflector, preferably a Mangin mirror or parabolic reflector with field corrector, aligned with an input aperture. A photodiode receives the signal from the reflector for subsequent demodulation. A background rejection filter is disposed between the reflector and the photodiode at the focal point of the mirror. The transceiver provides signal regeneration and switchable data rates. Connections are made to optical or electrical digital inputs and outputs bearing signals of various protocols. The plurality of lasers includes adjustable-beamwidth collimating lenses. Monitoring circuitry including a controller monitors the system. A stand-alone backup RF transceiver operating in conjunction with the laser transceiver provides enhanced availability. An efficient high-current, high power laser driver capable of modulating a laser between 100 and 1500 mA at data rates greater than 10 Mbits/sec is provided. A highly efficient thermoelectric cooler operates to cool the laser diode, or other objects requiring cooling.

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